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Indian Standard

SPECIFICATION FOR NYLON FABRICS FOR INDUSTRIAL AND SPECIAL PURPOSES

(Second Reprint JULY 1984)

UDC 677.494.675.064

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INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Gr 2

February 1968

Indian Standard
SPECIFICATION FOR NYLON FABRICS FOR INDUSTRIAL AND SPECIAL PURPOSES

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Indian Standard
SPECIFICATION FOR NYLON FABRICS FOR INDUSTRIAL AND SPECIAL PURPOSES

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 14 December 1967, after the draft finalized by the Man-Made Fibre and Fabric Sectional Committee had been approved by the Textile Division Council.

0.2 The constructional particulars and other requirements given in this standard are based on the ' Schedule of particulars ' supplied by the Ministry of Defence, Government of India.

0.3 This standard contains clauses **3.3**, **3.5** and **3.6.1**, which call for agreement between the buyer and the seller for permitting him to use his option for selection to suit his requirements.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes constructional details and other particulars of 6 varieties of nylon fabric, undyed or dyed used for industrial and special purposes.

1.2 This standard does not specify the general appearance, feel, etc of the fabric (*see also* **3.5**).

2. MANUFACTURE

2.1 Yarn — Continuous filament nylon yarn of medium tenacity should be used in the manufacture of the fabric. The tenacity of the yarn should be so chosen that the fabric complies with the requirements of this standard. The approximate count of warp and weft yarn used in the manufacture of fabric is given in Table 1.

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*Rules for rounding off numerical values (*revised*).

TABLE 1 PARTICULARS OF NYLON FABRICS FOR INDUSTRIAL AND SPECIAL PURPOSES

[*Clauses* 2.1, 3.1, 6.5(b) *and* 6.5(c)]

VARIETY No.	WEAVE	UNIVERSAL COUNT* (OR DENIER) OF YARN, APPROXIMATE		ENDS/dm	PICKS/dm	WEIGHT, *Max*	BREAKING LOAD ON 5·0 × 20 cm STRIPS, *Min*	
		Warp	Weft				Warpway	Weftway
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
						g/m²	kg	kg
1	Plain	5·0 tex (or 45 d), or 6·6 tex (or 60 d)	5·0 tex (or 45 d), or 6·6 tex (or 60 d)	700 or 610	450 or 350	68	63	40
2	2/2 Matt	6·6 tex (or 60 d)	6·6 tex (or 60 d)	460	400	60	60	50
3	2/2 Matt	6·6 tex (or 60 d)	6·6 tex (or 60 d)	560	560	80	70	70
4	2/2 Matt	6·6 tex (or 60 d)	6·6 tex (or 60 d)	860	560	100	105	70
5	2/2 Matt	9·9 tex (or 90 d)	9·9 tex (or 90 d)	640	560	130	125	95
6	2/2 Matt	23 tex (or 210 d)	23 tex (or 210 d)	410	380	200	200	180
Tolerance		—	—	+5 per-cent −2·5 per cent	+5 per-cent −2·5 per cent	—	—	—
Methods of Test		—	—	**7.1** of IS : 1963-1961†	**7.2** of IS : 1963-1961†	**7.1.1** of IS : 1964-1961‡	**9.1** to **9.4** of IS : 1969-1961§	

*Universal count, in tex (the number of grams per kilometre).

†Method for determination of ends and picks per unit length in woven fabrics.

‡Methods for determination of weight per square metre and weight per linear metre of fabrics.

§Method for determination of breaking load and elongation at break of woven fabric (by constant-rate-of-traverse machine).

2.2 Fabric

2.2.1 The fabric should be free from weaving and processing defects.

2.2.2 The selvedges should be firm, straight, even and well woven. It should have the same tension as the remainder of the fabric.

2.2.3 The fabric should be scoured or dyed as required.

2.2.3.1 If the fabric is dyed, it should be dyed after scouring.

2.2.4 The fabric should be free from sizing or finishing materials.

3. REQUIREMENTS

3.1 Construction — Nylon fabrics shall comply with the requirements of Table 1.

3.2 Other requirements of nylon fabrics along with methods of tests are given in Table 2.

TABLE 2 OTHER REQUIREMENTS OF NYLON FABRICS FOR DEFENCE PURPOSES

(*Clauses* 3.2 *and* 3.4.1)

Sl No.	Characteristic	Requirement	Method of Test
i)	*p*H value	6 to 8·5	IS : 1390-1961*
ii)	Width	As agreed to between the buyer and the seller +2 per-cent −1	7.2 and 7.3 of IS : 1954-1961†
iii)	Length	As agreed to between the buyer and the seller	6.4 of IS : 1954-1961†
iv)	Colour fastness:		
	To light	4 or better	IS : 2454-1967‡
	To washing	4 or better	IS : 764-1966§
v)	Water repellancy:		
	Average of five tests	Not less than 80	IS : 390-1952‖
	Single test	Not less than 70	

*Methods for determination of *p*H value of aqueous extracts of textile materials.

†Methods for determination of dimensions of fabrics.

‡Method for determination of colour fastness of textile materials to artificial light.

§Method for determination of colour fastness of textile materials to washing: Test 3 (*first revision*).

‖Method for spray test for estimating the water repellancy of water-resisting fabrics (permeable to air).

3.3 Dyeing — The fabric, if required, shall be dyed with suitable dyes as agreed to between the buyer and the seller.

3.4 Water Repellancy — The fabric, if required, shall be given a water repellant finish by suitable materials as agreed to between the buyer and the seller.

3.4.1 The water repellant finish of the fabric shall be assessed by the ratings prescribed in Table 2.

3.5 Sealed Sample — If, in order to illustrate or specify the general appearance, feel, and certain indeterminable unmeasurable characteristics of the fabric, a sample has been agreed upon and sealed, the supply shall be in conformity with the sample in such respects.

3.5.1 The custody of the sealed sample shall be a matter of prior agreement between the buyer and the seller.

4. MARKING

4.1 The fabric shall be marked with the following:

a) Name of the material;
b) Variety No. and the legend, 'Ref ISS 4399';
c) Manufacturers' name, initials or trade-mark;
d) Width and length of the piece;
e) Colour fastness rating in case of dyed fabric; and
f) Month and year of manufacture.

4.1.1 The fabric may also be marked with the ISI Certification Mark.

Note — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

5. PACKING

5.1 Nylon fabrics shall be packed in cases in conformity with the procedure laid down either in IS : 2194-1963* or IS : 2195-1964†, as required.

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*Code for seaworthy packaging of man-made fibre fabrics.

†Code for inland packaging of man-made fibre fabrics and man-made fibre yarns.

6. SAMPLING

6.1 Lot — The quantity of nylon fabrics of the same variety delivered to a buyer against one despatch note shall constitute the lot.

6.2 The conformity of the lot shall be determined on the basis of the tests carried out on the samples selected from it.

6.3 Unless otherwise agreed to between the buyer and seller the number of pieces selected at random from a lot shall be as given below:

Lot Size	*Sample Size*	*Sub-Sample Size*
Up to 50	3	3
51 „ 150	5	3
151 „ 300	8	5
301 and above	13	5

6.4 The pieces selected according to **6.3** shall be tested for ends and picks/dm, and width and length.

6.4.1 The number of pieces selected for testing weight, breaking load, *p*H value, colour fastness and water repellancy shall be the sub-sample size in **6.3**. These may be selected from those already tested in **6.4**.

6.5 Criteria for Conformity — The lot shall be declared conforming to the requirements of this standard if the following conditions are satisfied:

a) All the pieces tested according to **6.4** satisfy the relevant requirements for each of the characteristics.

b) From the test results for weight the average $\bar{x}$ and range R shall be calculated and the value of the expression $\bar{x} + 0{\cdot}6R$ is less than or equal to the upper limit given in Table 1.

c) From the test results for breaking load the average $\bar{x}$ and the range R shall be calculated and the value of the expression $\bar{x} - 0{\cdot}6R$ is greater than or equal to the lower limit given in Table 1.

d) All the test specimens tested for *p*H value, colour fastness and water repellancy satisfy the corresponding requirements.

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

QUANTITY	UNIT	SYMBOL
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

QUANTITY	UNIT	SYMBOL
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

QUANTITY	UNIT	SYMBOL	DEFINITION
Force	newton	N	1 N = 1 kg.m/s^2
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m^2
Frequency	hertz	Hz	1 Hz = 1 c/s (s^{-1})
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pascal	Pa	1 Pa = 1 N/m^2

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